

RTA	IFPKQYPIINF	TAGATVQSYTNF	IRAVRGRLTTG	ADVRHEIPVLPNRVG	50
GELONIN	GLD----	TVSFSTKGATYITYV	NFLNELRVKLKPEGN-SHGIPLLRKKCD	45	
RTA	LPINQRFILVELSNHAE	SVTLALDVTNAVVVGYRAGNSAYFFH	PDNQED	100	
GELONIN	DP-GKCFVLVALSNDNGQLAEIAIDVTSVYVVGYQVRNRSYFF----	KDA	90		
RTA	AEAITHLFTDVQNR	YTFAFGGNYDRLEQLAGNLRENI	ELGNGLPEEAISA	150	
GELONIN	PDAAYEGLFKNTIKTRLHFGGTYP	PSLEG-EKAYRETTDLGIEPLRIGIKK	139		
RTA	LYYYSTGGTQLPTLARSFII	CIOMISEAARFQYIEGEMRTRIRYNRRSAP	200		
GELONIN	LDENAI	DNYPTEIASSLLVVIOMVSEAAARFTFIENQIRNN--FQQRIRP	187		
RTA	DPSVITLENSWGRL	STAIQESN-QGAFASPIQLQRRNGSKFSVYDVSILI	249		
GELONIN	ANNTISLENKWGKLSFQIRTS	GANGMFSEAVELERANGKKYYVTAVDQVK	237		
RTA	PIIALMVYRCAPPSSQF		267		
GELONIN	PKIALLKFVDKDPK		251		

RTA	I-----FPKQYPIINFITTAGATVQSYTNFIRAVRGRLTTGADVRHEIPV	44
BRIP	AAKMAKNVDKPLFTATFNVOASSAD-YATFIAGIRNKLRNPAHFSHNRPV	49
RTA	LPN-RVGLPINQRFILVELSNHAELSVTLALDVTNAYVVGYRAGNSAYFF	93
BRIP	LPPVEPNVPPSRWFHVVLKASPTSAGLTLAIRADNIYLEGFKSSDGTWWE	99
RTA	HPDNQEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLAGNLRENIELGNP	143
BRIP	LTPGLIPGATYV-----GFGGTYRDLLGDTDKL-TNVALGRQQ	136
RTA	LEEAISALY----YYSTGGTQLPTLARSFIICIQMISEAARFQ----YIE	185
BRIP	LADAVTALHGRTKADKASGPKQQQAREAVTTLVLMVNEATRFQTVSGFVA	186
RTA	GEMRTRIRYNRRSAPDPSVITLENSWGRLSTAIQESNQGAFASPIQLQRR	235
BRIP	GLLHPKAVEKSGKIGNEMKAQVNGWQDLSAALLKTDVKPPPGKSPAKFA	236
RTA	NGSKFSVDVSIILIPIIALMVYRCAP-----PPSSQF	267
BRIP	PIEKMGVRTAEQAANTLGILLFVEVPGGLTVAKALELFHASGGK	280

RTA	IFPKQYPIINF	TAGATVQSYTNF	IRAVRGR	LT	GADVRHEIP	LPNRVG	50
MOM0II	D-----	VNFDL	STATAKYTKF	IEDFRATLP	FSHKV-YD	IPLLYSTIS	42
RTA	LPINORFIL	VELSNHAEL	SVTLALD	VTNAYV	VGYRAGNSA	YFFHHPD	100
MOM0II	--DSRRFI	LLDLTSY	AYETIS	VAIDVTN	VYVAYR	TRDVS	87
RTA	AEAITHL	FTDVQNR	YTFAGG	NYDRLEQL	AGNLREN	IELGNGL	150
MOM0II	PEAYN	ILFKGTR	-KITLP	YTGNYEN	LQTA	AHKIREN	136
RTA	LYYSTGG	TQPTLARS	FI	CIOMISEA	ARFQYIEG	EMRTRIR	200
MOM0II	LFYNAQSA	-----	PSALLV	LIIQIT	AEARFKY	IERHVAKY	179
RTA	DPSVIT	LENSWGR	LSTAI--	QESNOG	AFASPIQL	QRRNGSK	246
MOM0II	NLAIIS	LENQWS	ALSKQIF	LAQNQGG	KFRNP	VDLIKPTG	229
RTA	ILIP	IIALMV	RCAPP	SSQF			267
MOM0II	VVKGN	IKLLNS	RASTADEN	FI	TM	TLLGESV	263

RTA	IFPKQYPIINF	TTAGATVQSYTNFIRAVRGR	LT	TGADVRHEIPVLPNRVG	50	
LUFFIN	D-----	VRFSLSGSSSTYSKFIGDLRKALPSNGTVYNLTILLSSASG			43	
RTA	LPINQRFILVELSNHAE	SVTLALDVTNAYVVGYRAGNSAYFFH		PDNQED	100	
LUFFIN	---	ASRYTLM	TL	SNYDGKAITVA	VDVSQLYIMGYLVNSTSYFF---NESD	87
RTA	AEAITHLFTDVQNR	YTFAFGGNYDRLEQLAGNLRENI		ELGNGLPEEAISA	150	
LUFFIN	AKLASQYVFKGSTIV	TLPYSGNYEKLQTAAGKIREKI		PLGFPALDSALTT	137	
RTA	LYYSTGGTQLPTLARSFI	ICIOMISEAARFQYIEGEMRTRIRYNRR		SAP	200	
LUFFIN	IFHYDSTAA----	AAFLVILQTTAEASRFKYIEGQIIERI--SKNQVP			180	
RTA	DPSVITLENS-WGR	LSTAIQ--ESNQGA		FASPIQLORRNGSKFSVYD	VS	247
LUFFIN	SLATISLENSLWSALS	KQIQLAQTNGT		FKTPVVTDDKQQRVEITN	VTS	230
RTA	LIP	IIALMVYRCAPP		SSQF	267	
LUFFIN	KVVTKNIQL	LLNYKQ		NVA	248	

RTA	IFPKQYPIINF	TAGATVQSYTNF	IRAVRGRLTTG	ADVRHEIPVLP	NRVG	50
TRICHO	D-----	VSFRLSGATSSSYGVFISNLRKALPNERKL-YDIPLL--RSS				40
			*			
RTA	LPINQRFILVELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHHPDNQED					100
TRICHO	LPGSORYALIH	LTNYADETISVAIDVTNVYIMGYRAGDTSYFF--NEASA				88
			*			
RTA	AEAITHLFTDVQNR	YTFAGGNYDRLEQLAGNLRENIELGNGLPEEAISA				150
TRICHO	TEAAKYVFKDAMRKV	TLPYSGNYERLQTAAGKIRENIPGLPALDSAITT				138
			*			
RTA	LYYSTGGTQLPTLARSFI	CICIMISEAARFOYIEGEMRTRIRYNRRSAP				200
TRICHO	LFYYNANSA-----	ASALMVLIQSTSEAAARYKFIEQQIGKRV--DKTFLP				181
			** *			
RTA	DPSVITLENSWGR	LSTA IQ--ESNQGAFA SPIQLORRNGSKFSVYDV--S				246
TRICHO	SLAIISLENSWSALSK	QIQIASTNNGQFESPVVLINAGNQRVTTITNVDAG				231
			*			
RTA	ILIP	IIALMVRCAPPSSQF				267
TRICHO	VVTSN	IALLLNRNMA				247

RTA	IFPKQYPIINFITAGATVQSYTNFIRAVRGRLLTTGADVRHEIPVLPNRVG	50
MOMOI	D-----VSFRLSGADPRSYGMFIKDLRNALPFREKVYNIPLLPSVSG	43
RTA	LPINQRFILVELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQED	100
MOMOI	---AGRYLLMHLFNYDGKTIITVAVDVTNVYIMGYLADTTSYFFNEPAAEL	90
RTA	AEAITHLFTDVQNRYTFAFGGNYDRLEQLAGNLRENIELGNGLPEEAISA	150
MOMOI	ASQ--YVFRDARRKITLPYSGNYERLQIAAGKPREKIPIGLPALDSAIST	138
RTA	LYYSTGGTQPTLARSFIICIQMISEAARFQYIEGEMRTRIRYNRRSAP	200
MOMOI	LLHYDSTAA-----AGALLVLIQTAAEARFKYIEQQIQERA--YRDEVP	181
RTA	DPSVITLENSWGRNSTAIQ--ESNQGAFASPIQLQRRNGSKFSVYDVSIL	248
MOMOI	SLATISLENSWGLSKQIQLAQGNNGIFRTPIVLVDNKGNRVQITNVTSK	231
RTA	IPIIALMVY-----RCAPPSSQF	267
MOMOI	VVTSNIQLLLNTRNIAEGDNGDVSTTHGFSST	263

RTA	IFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTGADVRHEIPVLPNRVG	50
MAP	A-PTLETIASLDLNNPT--TYLSFITNIRTKVADKTE-----OCTIQKIS	42
RTA	LPINQRFILVELSNHAELSVTLALDVTNAYVVGYRA---GNSAYFFHPDN	97
MAP	KTFTQRYSIDLIVSSTQKITLAIDMADLYVLGYSDIANNKGRAFFFKDV	92
RTA	QEDAEAITHLFTDVQNRYTFAFGGNYDRLEQLAGNLRENIELGNGLPEEA	147
MAP	TEAVANNFFPGATGTNRIKLTFTGSYGDLEK-NGGLRKDNPLGIFRLENS	141
RTA	ISALYYYSTGGTQLPTLARSFIICIMISEAARFQYIEGEMRTRIRYNRR	197
MAP	IVNIY---GKAGDVKKQAKFFLLAIQMVSEAAARFKYI-SDKIPSEKYEE-	186
RTA	SAPDPSVITLENSWGRSLTAIQESNQGAFASPIQLORRNGSKFSVYDVSI	247
MAP	VTVDEYMTALENNWAKLSTAVYNSKPSTTTATKCQLATSPVTISPWIFKT	236
RTA	LIPIIALMVYRCAPPPSSQF	267
MAP	VEEIKLVMGLLKSS	250

RTA IFPKQYPIINFITTAGATVQSYTNFIRAVRGRLLTTGADVRRHEIPVLPNRVG 50

PAPS I-----NTITFDAGNATINKYATFMESLRNEAKDPSLKCYGIPMLPNTNS 45  
\* \* \*

RTA LPINORFILVELSNHAELSVTLALDVTNAYVVGVRAGNSA-----YFFHP 95

PAPS ---TIKYLVLKLGASLKTITLMLRRNNLYVMGYSDPYDNKCRYHIFNDI 92  
\*

RTA DNQEDAEAITHLFTDVONRYT--FAFGGNYDRLEQLAG-NLRENIELGNG 142

PAPS KGTEYSDVENTLCPSSNPRVAKPINYNGLYPTLEKKAGVTSRNEVOLGIQ 142  
\*

RTA PLEEAISALYYSTGGTQLPTLARSFIIQIMISEAARFQYIEGEMRTI 192

PAPS ILSSDIGKI--SGQGSFTEKIEAKFLLVAIQMVSEARFKYIENQVKTN- 189  
\* \*\* \*

RTA RYNRRSAPDPSVITLENSWGRLLSTAIQESNQGAFASPIQLORRRNGSKFSV 242

PAPS -FNRDfspNDKVLDEENWGKISTAIHNSKNGALPKPLELKNADGTKWIV 238  
\*

RTA YDVSILIPIIALMVYRCAPPSSQF 267

PAPS LRVDEIKPDVGLLNY--VNGTCOAT 261



RTA	IFPKQYPIINF	TTAGATVQSYTNF	IRAVRGRLTT	GADVRHEIPVLPNRVG	50
SAP6	V-----	TSITLDLVNPTAQ	QYSSFVDKIRNNVKDPN	LKYGGTDI--AVIG	43
RTA	LPINQRFILVEL	SNHAELSVTLALDVTNAYV	VGYRAGNS-----	AYFFHP	95
SAP6	PPSKEKFLRINF	QSSRG-TVSLGLKRDNL	YVVAYLAMDN	TNVNRAYYFRS	92
RTA	DNQEDAEAI	THLFTDVQNRYTFA	GGNYDRLEQ-----	LAGNLENIELG	140
SAP6	EITSAESTALF	PEATTA	NQKALEYTEDYQ	SIEKNAQITQGDQSRKELGLG	142
RTA	NGPLEEAI	SA	LYYSTGGTQLPTLARSFI	ICIQMISEAARFQYIEGEMRT	190
SAP6	IDLLSTSM	EAV---	NKKARVVKDEARFLLIA	IQMTAEARFRYIQNLVIK	189
RTA	RIRYNRRSAPD	PSVITLENSWGR	LSTAI-QESNQGA	FASPIQLORRNGSK	239
SAP6	N--FPNKF	SENKVIOFEVNW	KKISTAIYGD	AKNGVFNKDYDFGFGKVRQ	237
RTA	FSVYDVSIL	IP	IIALMVYRCAPP	SSQF	267
SAP6	VKDLOMG	LL-----	MYLGKPK	SSNEAN	259





\$H65K-1  
 AGT CGT CGA CAC GAT GGA CAT GAG GAC CCC TGC TCA GTT TCT TGG CAT CCT CCT ACT CTG GTT  
 TCC AGG TAT CAA ATG TGA CAT CCA GAT GAC TCA GT

HUH-K1  
 TGA CTC GCC CGG CAA GTG ATA GTG ACT CTG TCT CCC AGA CAT GCA GAC ATG GAA GAT GAG GAC  
 TGA GTC ATC TGG ATG TC

HUH-K2  
 TCA CTT GCC GGG CGA GTC AGG ACA TTA ATA GCT ATT TAA GCT GGT TCC AGC AGA AAC CAG GGA  
 AAT CTC CTA AGA CCC T

HUH-K3  
 GAT CCA CTG CCA CTG AAC CTT GAT GGG ACC CCA TCT ACC AAT CTG TTT GCA CGA TAG ATC AGG  
 GTC TTA GGA GAT TTC C

HUH-K4  
 GGT TCA GTG GCA GTG GAT CTG GGA CAG ATT ATA CTC TCA CCA TCA GCA GCC TGC AAT ATG AAG  
 ATT TTG GAA TTT ATT ATT G

HUH-K5  
 GTT TGA TTT CAA GCT TGG TGC CTC CAC CGA ACG TCC ACG GAG ACT CAT ACT GTT GAC AAT  
 AAT AAA TTC CAA AAT CTT C

HUH-G1  
 TGT CGA CAT CAT GGC TTG GGT GTG GAC CTT GCT ATT CCT GAT GGC AGC TGC CCA AAG TGC CCA  
 AGC ACA GAT CCA GTT GGT GCA G

HUH-G2  
 AAG GTA TAC CCA GAA GCT GCG CAG GAG ATT CTG ACG GAC CCT CCA GGC TTC TTT CCA GGT  
 CCA GAC TGC ACC AAC TGG ATC T

FIG. 11A

HUH-G3  
 GCA GCT TCT GGG TAT ACC TTC ACA AAC TAT GGA ATG AAC TGG GTG AAG CAG GCT CCA GGA AAG  
 GGT TTA AGG TGG ATG GGC TGG

HUH-G4  
 AAA GAG AAG GTA AAC CGT CCC TTG AAG TC A TCA GCA TAT GTT GGC TCT CCA GTG TGG GTG TTT  
 ATC CAG CCC ATC CAC CTT AAA C

HUH-G5  
 GAC GGT TTA CCT TCT TTT TGG ACA CGT CTA AGT GCA CTG CCT ATT TAC AGA TCA ACA GCCTCA GAG  
 CCG AGG ACA CGG CTA CAT

HUH-G6  
 AGG AGA CGG TGA CCG TGG TCC CTT GGC CCC AGA CAT CGA AGT ACC AGT AAC CCC GTC TTG  
 TAC AGA AAT ATG TAG CCG TGT CCT CGG C

H65G-2S  
 ACT AGT GTC GAC ATC ATG GCT TGG GT

H65-G2  
 GAG GAG ACG GTG ACC GTG GT

H65K-2S  
 AGT CGT CGA CAC GAT GGA CAT GAG GAC

JK1-HindIII  
 GTT TGA TTT CAA GCT TGG TGC

FIG. 11B

pos	10	20	30	40	50
EU	DIQMTQS	PSTLSASVGD	RVITICRASQS	IN TWLAWYQQKPGKAPKLLMY	KAS
hK1	DIQMTQS	PSSLSASVGD	RVITICrASQX	IS xYLxWYQQKPGKAPKLLIY	aAS
TAC	QIVLTQS	PAIMSASPEK	VTITCSASSS	IS YMHWFQQKPGTSPKLLIY	TTS
bind	+ - + + + + +	O + + + + + +	+ + + + + + - -	- - - OOO + + + + + - - -	- - -
bury	+ - + - + - +	O + + O + - +	+ + - + - + + +	- + + - - = O = + + + + + O = + - - - =	+ + +
mod	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •
M/H	H HM	HHM M HH	h M	M MM M hm M	MM
prop	DIQLTQS	PSSMSASPGD	RVITICRASSS	IS YMHWFQQKPGKSPKLLIY	T'TS
Que	DIQMTQS	PSTLSASVGD	RVITICRASSS	IS YMHWFQQKPGKAPKLLIY	T'TS
pos	60	70	80	90	100
EU	SLESGVPSR	FIGSGSGTE	FTLTISSLQPD	FATYVCQYNSDS	KM FGQGTKV EVK
hK1	xLxsgVPSR	FsgSGSGTx	FTLTISsLQpe	FATYVCqyxxxp	xt FGqGTKv eik
TAC	NLASGVPAR	FSGSGSGTS	YSLTISRMEAE	DAATYYCHQRSTYP	LT FGSGTKL ELK
bind	- + OO + + O + + + +	- + - + - + - + - +	- + + + + + + + + + + +	- O - - - - -	- O O + + + + + + + +
bury	+ + O + + - O + - +	- + - + - + - + - +	- + - + - + - + - + - +	- - - - - + + + + +	- - - - - + + + + +
mod	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •
M/H	M M H	m	MH hMHm h	M MMM	M h M m
prop	NLASGVPSR	FSGSGSGTS	YTLTISSMQAE	FATYYCHQRSTYP	LT FGQGTKL ELK
Que	NLASGVPAR	FSGSGSGTE	FTLTISSLQPD	FATYYCHQRSTYP	LT FGQGTKV EVK

FIG. 12A

